

What is claimed is:

1. A method of controlling the power to transmitters in a multi-transmitter communications station, said method comprising determining the power being consumed by each of the transmitters; determining a desired power setting of each of the transmitters; comparing the power being consumed with the desired power settings to determine whether the present power settings are proper; and if the present power settings are not proper, then:

determining whether the power needed for the desired power settings is available;

if the power needed for the desired power settings is available, adjusting the power settings to provide the desired power settings; and

if the power needed for the desired power settings is not available, determining load priorities of the transmitters, and if there is sufficient power for the determined load priorities, adjusting the power settings to provide power based on the load priorities.

2. A method as claimed in claim 1, wherein the desired power setting of each of the transmitters is determined by receiving a sent power indication of the transmitter; determining the power received from the transmitter; determining the propagation loss for the transmitter based on the sent power indication and the received power; and determining the desired power setting based on the propagation loss.

3. A method as claimed in claim 1, wherein the desired power setting of each of the transmitters is determined by receiving a sent power indication of the transmitter; determining a signal to noise ratio of the transmitter; determining the propagation loss for the transmitter based on the signal to noise ratio; and determining the desired power setting based on the propagation loss.

4. An article, comprising a storage medium having instructions stored thereon, the instructions when executed controlling the power to transmitters in a multi-transmitter communications station by determining the power being consumed by each of the transmitters; determining a desired power setting of each of the transmitters; comparing the power being consumed with the desired power settings to determine whether the present power settings are proper; and if the present power settings are not proper, then determining whether the power needed for the desired power settings is available; if the power needed for the desired power settings is available, adjusting the power settings to provide the desired power settings; and if the power needed for the desired power settings is not available, determining load priorities of the transmitters, and if there is sufficient power for the determined load priorities, adjusting the power settings to provide power based on the load priorities.

5. An article as claimed in claim 4, wherein the instructions when executed determine the desired power setting by receiving a sent power indication of the transmitter; determining the power received from the transmitter;

determining the propagation loss for the transmitter based on the sent power indication and the received power; and determining the desired power setting based on the propagation loss.

6. An article as claimed in claim 4, wherein the instructions when executed determine the desired power setting by receiving a sent power indication of the transmitter; determining a signal to noise ratio of the transmitter; determining the propagation loss for the transmitter based on the signal to noise ratio; and determining the desired power setting based on the propagation loss.

7. A communications station, comprising:

a plurality of variable gain amplifiers for amplifying respective input signals to provide intermediate signals;

a plurality of high gain amplifiers for amplifying the intermediate signals from said variable gain amplifiers to provide output signals;

a plurality of transmitting antennae for transmitting the output signals from said high gain amplifiers to a plurality of receiving stations;

a plurality of monitoring power supplies for providing a voltage to each of said high gain amplifiers and for monitoring the current in each of said high gain amplifiers, permitting determination of the power provided to the output signals by said high gain amplifiers; and

a power profile processor responsive to a desired power setting signal from one of the receiving stations for providing a gain signal to one of said

variable gain amplifiers associated with said one of the receiving stations to adjust the gain of said one of said variable gain amplifiers so as to adjust the power provided to the output signal of the high gain amplifier associated with said one of said variable gain amplifiers.

8. A communications station as claimed in claim 7, wherein each of said high gain amplifiers comprises a traveling wave tube amplifier.

9. A communications station as claimed in claim 7, further comprising an input circuit for providing the input signals.

10. A communications station as claimed in claim 9, wherein said input circuit comprises a receiving antenna for receiving a composite input signal from a transmitter, and a demodulator for separating the composite input signal into the respective input signals and applying the respective input signals to the variable gain amplifiers.

11. A communications station as claimed in claim 10, wherein said input circuit further comprises a plurality of low noise amplifiers for amplifying the respective input signals from the demodulator and applying the resulting signals to the variable gain amplifiers.

12. A communications station as claimed in claim 11, wherein said input circuit further comprises a signal processing circuit for processing the respective input signals from the low noise amplifiers and applying the respective processed signals to the variable gain amplifiers.

13. A communications station as claimed in claim 7, wherein said variable gain amplifiers, said high gain amplifiers, said transmitting antennas, said monitoring power supplies, and said power profile processor are within a communications satellite.

14. A communications system, comprising a signal source for providing a plurality of input signals; a plurality of signal receiving stations; and a communications station, wherein said communications station, comprises:

a plurality of variable gain amplifiers for amplifying the plurality of input signals to provide intermediate signals;

a plurality of high gain amplifiers for amplifying the intermediate signals from said variable gain amplifiers to provide output signals;

a plurality of transmitting antennae for transmitting the output signals from said high gain amplifiers to said plurality of receiving stations;

a plurality of monitoring power supplies for providing a voltage to each of said high gain amplifiers and for monitoring the current in each of said high gain amplifiers, permitting determination of the power provided to the output signals by said high gain amplifiers; and

a power profile processor responsive to a desired power setting signal from one of said receiving stations for providing a gain signal to one of said variable gain amplifiers associated with said one of said receiving stations to adjust the gain of said one of said variable gain amplifiers so as to adjust the power provided to the output signal of the high gain amplifier associated with said one of said high gain amplifiers.

15. A communications system as claimed in claim 14, wherein each of said high gain amplifiers comprises a traveling wave tube amplifier.

16. A communications system as claimed in claim 14, further comprising an input circuit for providing the input signals.

17. A communications system as claimed in claim 16, wherein said input circuit comprises a receiving antenna for receiving a composite input signal from a transmitter, and a demodulator for separating the composite input signal into respective input signals and applying the respective input signals to the variable gain amplifiers.

18. A communications system as claimed in claim 17, wherein said input circuit further comprises a plurality of low noise amplifiers for amplifying the respective input signals from the demodulator and applying the resulting signals to the variable gain amplifiers.

19. A communications system as claimed in claim 18, wherein said input circuit further comprises a signal processing circuit for processing the respective input signals from the low noise amplifiers and applying the respective processed signals to the variable gain amplifiers.

19. A communications system as claimed in claim 14, wherein said communications station is within a communications satellite.